

To: wjmcgui@yalevm.cis.yale.edu (William J. McGuire)

Subject: heuristics ...

Date: Mon, 18 Aug 1997 15:27:06 EDT

From: Joshua Lederberg <jsl@rockvax.rockefeller.edu>

Thank you for your detailed and engaged response to my May 30 letter. It will take some time to digest all you had to say.

I will remark now, that I was the one biologist on the DENDRAL team. I never for a moment imagined that we were emulating human intelligence, and deprecated every assertion that there was much interplay between human psychology and what we were doing. But I would be hard put to prove that our own brains do **not** operate in some similar fashion, that what we call creativity is the ability to do a combinatorial ring the changes, but with more heuristically guided change of level of abstraction than we have learned to build into the programs.

Part of the reason many psych-emulators get off the track is that they have taken on a very difficult task, especially of validation of their hypotheses. There are very few empirically falsifiable inferences.

Re tactics vs. strategy: I have heard tell (or dreamed) the 1st law of systemdynamics, re suboptimization, that every level of a complex system works contrary to every other one. You are probably well acquainted with Ed Luttwak's "On Strategy".

Among many reasons for the difference in Ike's and Monty's strategic approaches: Ike felt he had an infinite reserve of men and materiel to expend in a war of attrition with the Germans; contra the Brits, who had already lost so much. Didn't stop Ike from modest investments in FORTITUDE, but that was the exception.

As in the military sphere, is there a place for teaching the history of a science to illustrate how to think strategically? There is precious little of that, known to me. We get mainly stories of serendipity -- which is a strategy too, but God help us not the only one.

Sincerely,